

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (canceled)
2. (canceled)
3. (canceled)
4. (canceled)

5. (original) A computer system, comprising:

a processor programmed to perform an arithmetic performance attribution computation to determine portfolio performance, relative to a benchmark, over multiple time periods t , where t varies from 1 to T , by determining coefficients $(A + \alpha_t)$, where the values α_t are defined as

$$\alpha_t = \left[\frac{R - \bar{R} - A \sum_{k=1}^T (R_k - \bar{R}_k)}{\sum_{k=1}^T (R_k - \bar{R}_k)^2} \right] (R_t - \bar{R}_t),$$

where A has any predetermined value, R_t is a portfolio return for period t , \bar{R}_t is a benchmark return for period t , R is determined by

$$R = \left[\prod_{t=1}^T (1 + R_t) \right] - 1,$$

and \bar{R} is determined by

$$\bar{R} = \left[\prod_{t=1}^T (1 + \bar{R}_t) \right] - 1;$$

and determining the portfolio relative performance as

$$R - \bar{R} = \sum_{t=1}^T (A + \alpha_t)(R_t - \bar{R}_t); \text{ and}$$

a display device coupled to the processor for displaying a result of the arithmetic performance attribution computation.

6. (original) A computer readable medium which stores code for programming a processor to perform an arithmetic performance attribution computation to determine portfolio performance, relative to a benchmark, over multiple time periods t , where t varies from 1 to T , by determining coefficients $(A + \alpha_t)$, where the values α_t are defined as

$$\alpha_t = \left[\frac{R - \bar{R} - A \sum_{k=1}^T (R_k - \bar{R}_k)}{\sum_{k=1}^T (R_k - \bar{R}_k)^2} \right] (R_t - \bar{R}_t),$$

where A has any predetermined value, R_t is a portfolio return for period t , \bar{R}_t is a benchmark return for period t , R is determined by

$$R = \left[\prod_{t=1}^T (1 + R_t) \right] - 1,$$

and \bar{R} is determined by

$$\bar{R} = \left[\prod_{t=1}^T (1 + \bar{R}_t) \right] - 1;$$

and determining the portfolio relative performance as $R - \bar{R} = \sum_{t=1}^T (A + \alpha_t)(R_t - \bar{R}_t)$.

7. (canceled)

8. (canceled)

9. (canceled)

10. (original) A computer system, comprising:

a processor programmed to perform a geometric performance attribution computation to determine portfolio performance, relative to a benchmark, over multiple time periods t , where t varies from 1 to T , by determining attribution effects for issue selection $(1 + I_{it}^G)$ given by

$$1 + I_{it}^G = \frac{1 + w_{it} r_{it}}{1 + w_{it} \bar{r}_{it}} \Gamma_t^I,$$

and determining attribution effects for sector selection $(1 + S_{it}^G)$ given by

$$1 + S_{it}^G = \left(\frac{1 + w_{it} \bar{r}_{it}}{1 + \bar{w}_{it} \bar{r}_{it}} \right) \left(\frac{1 + \bar{w}_{it} \bar{R}_t}{1 + w_{it} \bar{R}_t} \right) \Gamma_t^S,$$

where r_{jt} is a portfolio return for sector j for period t , \bar{r}_{jt} is a benchmark return for sector j for period t , w_{jt} is a weight for r_{jt} , \bar{w}_{jt} is a weight for \bar{r}_{jt} , R is determined by

$$R = \left[\prod_{t=1}^T (1 + R_t) \right] - 1$$

and \bar{R} is determined by

$$\bar{R} = \left[\prod_{t=1}^T (1 + \bar{R}_t) \right] - 1,$$

and determining the portfolio performance as

$$\frac{1 + R}{1 + \bar{R}} = \prod_{t=1}^T \prod_{i=1}^N (1 + I_{it}^G)(1 + S_{it}^G);$$

and

a display device coupled to the processor for displaying a result of the geometric performance attribution computation.

11. (original) The system of claim 10, wherein the values of Γ_t^I are

$$\Gamma_t^I = \left[\frac{1 + R_t}{1 + \bar{R}_t} \prod_{j=1}^N \left(\frac{1 + w_{jt} \bar{r}_{jt}}{1 + w_{jt} r_{jt}} \right) \right]^{1/N} \text{ and the values of } \Gamma_t^S \text{ are}$$

$$\Gamma_t^S = \left[\frac{1 + \bar{R}_t}{1 + \bar{R}_t} \prod_{j=1}^N \left(\frac{1 + \bar{w}_{jt} \bar{r}_{jt}}{1 + \bar{w}_{jt} \bar{r}_{jt}} \right) \left(\frac{1 + w_{jt} \bar{R}_t}{1 + \bar{w}_{jt} \bar{R}_t} \right) \right]^{1/N}.$$

12. (original) A computer readable medium which stores code for programming a processor to perform a geometric performance attribution computation to determine portfolio performance, relative to a benchmark, over multiple time periods t , where t varies from 1 to T , by determining attribution effects for issue selection $(1 + I_{it}^G)$ given by

$$1 + I_{it}^G = \frac{1 + w_{it} r_{it}}{1 + w_{it} \bar{r}_{it}} \Gamma_t^I,$$

and determining attribution effects for sector selection $(1 + S_{it}^G)$ given by

$$1 + S_{it}^G = \left(\frac{1 + w_{it} \bar{r}_{jt}}{1 + \bar{w}_{it} \bar{r}_{jt}} \right) \left(\frac{1 + \bar{w}_{it} \bar{R}_t}{1 + w_{it} \bar{R}_t} \right) \Gamma_t^S,$$

where r_{jt} is a portfolio return for sector j for period t , \bar{r}_{jt} is a benchmark return for sector j for period t , w_{jt} is a weight for r_{jt} , \bar{w}_{jt} is a weight for \bar{r}_{jt} , R is determined by

$$R = \left[\prod_{t=1}^T (1 + R_t) \right] - 1$$

and \bar{R} is determined by

$$\bar{R} = \left[\prod_{t=1}^T (1 + \bar{R}_t) \right] - 1; \text{ and determining the portfolio performance as}$$

$$\frac{1 + R}{1 + \bar{R}} = \prod_{t=1}^T \prod_{i=1}^N (1 + I_{it}^G)(1 + S_{it}^G).$$

13. (original) The computer readable medium of claim 12, wherein the values of

$$\Gamma_t^I \text{ are } \Gamma_t^I = \left[\frac{1 + R_t}{1 + \bar{R}_t} \prod_{j=1}^N \left(\frac{1 + w_{jt} \bar{r}_{jt}}{1 + w_{jt} r_{jt}} \right) \right]^{1/N} \text{ and the values of } \Gamma_t^S \text{ are}$$

$$\Gamma_t^S = \left[\frac{1 + \bar{R}_t}{1 + \bar{R}_t} \prod_{j=1}^N \left(\frac{1 + \bar{w}_{jt} \bar{r}_{jt}}{1 + w_{jt} \bar{r}_{jt}} \right) \left(\frac{1 + w_{jt} \bar{R}_t}{1 + \bar{w}_{jt} \bar{R}_t} \right) \right]^{1/N}.$$

14. (canceled)

15. (canceled)

16. (original) A computer system, comprising:

a processor programmed to perform a geometric performance attribution computation to determine portfolio performance, relative to a benchmark, over multiple time periods t , where t varies from 1 to T , by determining attribution effects $1 + Q_{ijt}^G$

given by

$$1 + Q_{ijt}^G = \prod_k \left(\frac{1 + a_{ijt}^k}{1 + b_{ijt}^k} \right) \Gamma_{ijt}^k,$$

where Γ_{ijt}^k are corrective terms that satisfy the constraint $\prod_{ij} (1 + Q_{ijt}^G) = \frac{1 + R_t}{1 + \bar{R}_t}$, each of

a_{ijt}^k and b_{ijt}^k is a coefficient for attribution effect j , sector i , and period t , the

coefficients a_{ijt}^k and b_{ijt}^k are obtained from arithmetic attribution effects

$Q_{ijt}^A = \sum_k a_{ijt}^k - \sum_k b_{ijt}^k$ which correspond to the attribution effects $1 + Q_{ijt}^G$, R_t is a

portfolio return for period t , \bar{R}_t is a benchmark return for period t , R is determined by

$$R = \left[\prod_{t=1}^T (1 + R_t) \right] - 1$$

and \bar{R} is determined by

$$\bar{R} = \left[\prod_{t=1}^T (1 + \bar{R}_t) \right] - 1, \text{ and}$$

determining the portfolio performance as $\frac{1 + R}{1 + \bar{R}} = \prod_{t=1}^T \prod_{i=1}^N \prod_{j=1}^M (1 + Q_{ijt}^G)$; and

a display device coupled to the processor for displaying a result of the geometric performance attribution computation.

17. (original) The system of claim 16, wherein $M = 2$, $1 + Q_{it}^G$ are attribution

effects for issue election given by $1 + Q_{it}^G = \frac{1 + w_{it} r_{it}}{1 + w_{it} \bar{r}_{it}} \Gamma_t^I$, and $1 + Q_{i2t}^G$ are attribution

effects for sector selection given by $1 + Q_{i2t}^G = \left(\frac{1 + w_{it} \bar{r}_{it}}{1 + \bar{w}_{it} \bar{r}_{it}} \right) \left(\frac{1 + \bar{w}_{it} \bar{R}_t}{1 + w_{it} \bar{R}_t} \right) \Gamma_t^S$,

where r_{it} is a portfolio return for sector i for period t , \bar{r}_{it} is a benchmark return for

sector i for period t , w_{it} is a weight for r_{it} , \bar{w}_{it} is a weight for \bar{r}_{it} , the values of Γ_t^I are

$$\Gamma_t^I = \left[\frac{1 + R_t}{1 + \bar{R}_t} \prod_{i=1}^N \left(\frac{1 + w_{it} \bar{r}_{it}}{1 + w_{it} r_{it}} \right) \right]^{1/N}, \text{ and}$$

the values of Γ_t^S are $\Gamma_t^S = \left[\frac{1 + \bar{R}_t}{1 + \bar{R}_t} \prod_{i=1}^N \left(\frac{1 + \bar{w}_{it} \bar{r}_{it}}{1 + w_{it} \bar{r}_{it}} \right) \left(\frac{1 + w_{it} \bar{R}_t}{1 + \bar{w}_{it} \bar{R}_t} \right) \right]^{1/N}$.

18. (original) A computer readable medium which stores code for programming a processor to perform a geometric performance attribution computation to determine portfolio performance, relative to a benchmark, over multiple time periods t , where t varies from 1 to T , by determining attribution effects $1 + Q_{ijt}^G$ given by

$$1 + Q_{ijt}^G = \prod_k \left(\frac{1 + a_{ijt}^k}{1 + b_{ijt}^k} \right) \Gamma_{ijt}^k,$$

where Γ_{ijt}^k are corrective terms that satisfy the constraint $\prod_{ij} (1 + Q_{ijt}^G) = \frac{1 + R_t}{1 + \bar{R}_t}$, each of

a_{ijt}^k and b_{ijt}^k is a coefficient for attribution effect j , sector i , and period t , R_t is a portfolio return for period t , the coefficients a_{ijt}^k and b_{ijt}^k are obtained from arithmetic attribution effects $Q_{ijt}^A = \sum_k a_{ijt}^k - \sum_k b_{ijt}^k$ which correspond to the attribution effects

$1 + Q_{ijt}^G$, \bar{R}_t is a benchmark return for period t , R is determined by

$R = [\prod_{t=1}^T (1 + R_t)] - 1$, and \bar{R} is determined by $\bar{R} = [\prod_{t=1}^T (1 + \bar{R}_t)] - 1$, and determining

the portfolio performance as $\frac{1 + R}{1 + \bar{R}} = \prod_{t=1}^T \prod_{i=1}^N \prod_{j=1}^M (1 + Q_{ijt}^G)$.

19. (original) The computer readable medium of claim 18, wherein $M = 2$,

$1 + Q_{i1t}^G$ are attribution effects for issue election given by $1 + Q_{i1t}^G = \frac{1 + w_{it} r_{it}}{1 + \bar{w}_{it} \bar{r}_{it}} \Gamma_t^I$, and

$1 + Q_{i2t}^G$ are attribution effects for sector selection given by

$$1 + Q_{i2t}^G = \left(\frac{1 + w_{it} \bar{r}_{it}}{1 + \bar{w}_{it} \bar{r}_{it}} \right) \left(\frac{1 + \bar{w}_{it} \bar{R}_t}{1 + w_{it} \bar{R}_t} \right) \Gamma_t^S,$$

where r_{it} is a portfolio return for sector i for period t , \bar{r}_{it} is a benchmark return for

sector i for period t , w_{it} is a weight for r_{it} , \bar{w}_{it} is a weight for \bar{r}_{it} , the values of Γ_t^I are

$$\Gamma_t^I = \left[\frac{1 + R_t}{1 + \bar{R}_t} \prod_{i=1}^N \left(\frac{1 + w_{it} \bar{r}_{it}}{1 + w_{it} r_{it}} \right) \right]^{1/N}, \text{ and}$$

the values of Γ_t^s are $\Gamma_t^s = \left[\frac{1 + \widetilde{R}_t}{1 + \overline{R}_t} \prod_{i=1}^N \left(\frac{1 + \overline{w}_{it} \overline{r}_{it}}{1 + w_{it} \overline{r}_{it}} \right) \left(\frac{1 + w_{it} \overline{R}_t}{1 + \overline{w}_{it} \overline{R}_t} \right) \right]^{1/N}$.